Lehigh Valley Plastics, Inc.

Manufacturers Resource Center

Technology Scouting Corrects Machine Shut Down and Reduces Costs for Lehigh Valley Plastics

Client Profile:
Lehigh Valley Plastics (LVP), established in 1971, is a state-of-the-art plastic materials manufacturer and supplier of plastic materials. LVP offers full-service capabilities from design and engineering to the production of nearly any plastic product. The company employs 85 people at its facility in Bethlehem, Pennsylvania.

Situation:
LVP was experiencing efficiency issues with their turning centers. The four machines were shut down every three minutes during the production process for one minute to remove stringers, excess material from the work area. The machining centers utilized in this process were originally designed for machining metals, not plastics. When the plastic is machined, the ductile properties of the plastics cause the removed mass to stay together rather than 'chip' as in a normal metal machining process. The fusing creates stringers which wrap around the chucks of the turning centers causing the machines to be shut down and the wraps cleared manually. Currently, to minimize the problem, LVP is adding a cooling fluid to the machine part interface, an additional cost to the production process, in an attempt to reduce the time involved in this process failure. There are some questions whether this fluid actually produces a better part; however, it is agreed that LVP would like to eliminate the need to use the cooling fluid which would reduce costs. In addition, if the stringer gets caught on the part, a product defect is likely to occur causing the part to be scrapped and remade, which increases production time and the per part costs. In rare cases, the wrap ups can also cause machine damage which would result in machine repairs and another increased cost. LVP contacted the Manufacturers Resource Center (MRC), a NIST MEP network affiliate, to find a way to eliminate shutting down the machines and increase productivity.

Solution:
LVP was selected as a participant in the Technology Scouting Pilot Research Initiative offered by NIST MEP, MRC and Research Triangle Institute International. The pilot effort is focused on a "pull-based" strategy unlike traditional "push-based" technology transfer techniques. The Technology Scouting effort is intended to search outside normal channels to find solutions for a small manufacturing client's unmet technology needs. This initiative identified targeted, potential solutions to LVP's technical problem from the hundreds of universities, federal labs, and companies where solutions reside. LPV was one of eight companies nationwide selected for this program. The solution space landscape included pneumatics and/or mechanical solutions, chip embrittlement techniques, tooling design, and in practice technologies. The optimum solution to the problem is a patented, controllable liquid nitrogen-based cooling technology that is specifically utilized for plastics. This technique precisely controls temperatures, increases machine efficiency, improves the surface finish, and is designed specifically for very soft to very dense plastics. It is a proven technology patented by a maior. local

company, Air Products.

Results:
* Anticipated cost savings of $1,000 per drum.
* Anticipated increase in machine capacity by 1,920 hours.

Testimonial:
"The Technology Scouting project identified several options for us that will eliminate a very costly slow down to our production process, wasted materials, and safety issues. We are pleased with the anticipated savings that will result from the changes we will make on our four machines and how it will improve our production throughput and resolve safety issues for our workers."
David Keim, President